Abstract

This invention provides arrays of independently acting compliant electrical contacts within a fuel cell. These contacts maintain electrical contact between a plate and the adjacent membrane electrode assembly, and provide substantially uniform internal pressure distribution and substantially uniform electrical contact. In one embodiment, the electrical contacts are springs, which can take a variety of forms.

12. Independently-acting compliant electrical contacts for maintaining electrical contact between a bipolar separator plate and a membrane electrode assembly in a fuel cell stack.

13. The independently-acting compliant electrical contacts according to claim 12, wherein said independently-acting compliant electrical contacts comprise springs.

14. A method for maintaining electrical contact between a bipolar separator plate and a membrane electrode assembly in a fuel cell stack comprising placing independently-acting compliant electrical contacts between said bipolar separator plate and said membrane electrode assembly.

15. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
flexible means for making electrical contact between said membrane electrode assembly and said bipolar separator plate.

16. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
flexible electrical contact members disposed between said membrane electrode assembly and said bipolar separator plate.

17. The fuel cell assembly according to claim 16, wherein said flexible electrical contact members comprise a plurality of springs, whereby said springs maintain independently-acting compliant electrical contact between said membrane electrode assembly and said bipolar separator plate.

18. A fuel cell assembly, comprising:
a bipolar separator plate, said bipolar separator plate having a first side and a second side;
a membrane electrode assembly, attached to and sealed to said first side; and
independently-acting compliant electrical contacts attached to said second side.

19. A fuel cell stack, comprised of a first assembly according to claim 18 and a second assembly according to claim 18, wherein the independently-acting compliant electrical contacts of said first assembly are in electrical contact with the membrane electrode assembly of said second assembly.

20. A fuel cell assembly comprising:
a membrane electrode assembly;
a bipolar separator plate; and
an independently-acting compliant electrical contact disposed between said membrane electrode assembly and said bipolar separator plate.

21. A fuel cell assembly comprising:

a membrane electrode assembly;

a bipolar separator plate;

first means for maintaining electrical contact between said membrane electrode assembly and said bipolar separator plate; and

second means for sealing said membrane electrode assembly with said bipolar separator plate, wherein said second means functions independently from said first means.